

# Product Information

## Complement C3 from human serum

Catalog Number **C2910**

Storage Temperature –70 °C

CAS RN 80295-41-6

### Product Description

Human complement C3 is a  $\beta_2$ -globulin, and is the third and most abundant component of the complement pathway. It plays a central role in complement activation, being involved in both the classical and alternative pathways. Complement C3 or its proteolytic fragments mediate many biological functions such as opsonization and anaphylatoxin activities.<sup>1-3</sup>

Pro-C3 is synthesized as a large single chain of 185 kDa and is processed to complement C3. Complement C3 is a disulfide-linked heterodimer that consists of an  $\alpha$ -chain (115 kDa) and a  $\beta$ -chain (70 kDa), in the plasma.<sup>4</sup> C3 is cleaved by the C3 convertases in either pathway (C4b2a, C3iBb, C3bBb) to C3 fragments, C3a with anaphylatoxic activity, and C3b with the capability of binding to cell membranes.<sup>5</sup> C3b (176 kDa), consisting of the large C-terminal portion of the  $\alpha$ -chain and the  $\beta$ -chain, interacts with other complement components to initiate the amplification cascade. C3b can also bind with membranes including bacteria and immune complexes in order to facilitate their ingestion by phagocytic cells.<sup>6</sup>

The product is supplied as a solution in phosphate buffered saline (PBS), pH 7.2.

Purity: ≥85% (SDS-PAGE)

Protein concentration based on  $E_{280}^{1\%} = 10.3$

Specific activity: ≥3,000 C3H50 units/mg protein

Unit definition: One C3H50 unit is defined as the amount of complement C3 required to yield 50% lysis of  $3 \times 10^7$  antibody sensitized sheep erythrocytes using complement C3 deficient serum through the classical pathway complement activation.

For a procedure to prepare antibody-sensitized sheep erythrocytes, please visit the following link at our Enzyme Explorer:

<https://www.sigmaaldrich.com/life-science/metabolomics/enzyme-explorer/cell-signaling-enzymes/complement-proteins/preparation-of-antibody.html>

### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

### Storage/Stability

The product ships on dry ice and storage at –70 °C is recommended. Repeated freezing and thawing is **not** recommended.

### References

1. Vogt, W. *et al.*, *Immunology*, **34**(1), 29-40 (1978).
2. Gigli, I., and Nelson, R.A. Jr., *Exp. Cell. Res.*, **51**(1), 45-67 (1968).
3. Mueller-Eberhard, H.J. *et al.*, *Biochemistry*, **10**(7), 1166-1172 (1971).
4. Sahu, A., and Lambris, J.D., *Immumol. Rev.*, **180**, 35-48 (2001).
5. Müller-Eberhard, H.J. *et al.*, *J. Exp. Med.*, **125**(2), 359-380 (1967).
6. Sandberg, A.L. *et al.*, *J. Immunol.*, **104**(2), 329-334 (1970).

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